Exam Prep: Microsoft Technology Associate 98-366: Windows Server Administration Fundamentals

MVA Microsoft Virtual Academy

Meet the Presenters

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Content Project Manager, Microsoft Learning

Background

- IT manager and implementer focused on deploying, maintaining and optimizing networks of all sizes
- IT Consulting projects include Custom SharePoint for Microsoft IT, Netware/Notes migration to AD/Exchange, Transition to centralized management (250 clients)
- Instructor and Director of Instruction
- Multiple Microsoft and other industry certifications (MCP, MCTS, MCSA, MCSE, MCT)

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Meet the Presenters

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Thomas Willingham
Content Developer, Cloud and Enterprise

Background

- Taught the Microsoft MCSE and the Novell CNE certifications, and worked as a network consultant for almost 10 years
- Courseware Author for MS Learning
- Content developer for Remote Desktop Virtualization at Microsoft for the last 5 years

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Course Topics

Windows Server Administration Fundamentals
01 | Server Overview
02 | Managing Windows Server 2008 R2
03 | Managing Storage
04 | Monitoring and Troubleshooting Servers
05 | Essential Services
06 | File and Print Services
07 | Popular Network Services and Applications

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Setting Expectations

Target Audience

- IT Help Desk staff interested in moving into Network/Systems Administration
- Anyone interested in learning more about networking

Suggested Prerequisites/Supporting Material

- Exam 98-349: Windows Operating System Fundamentals

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Server Overview

Module 1

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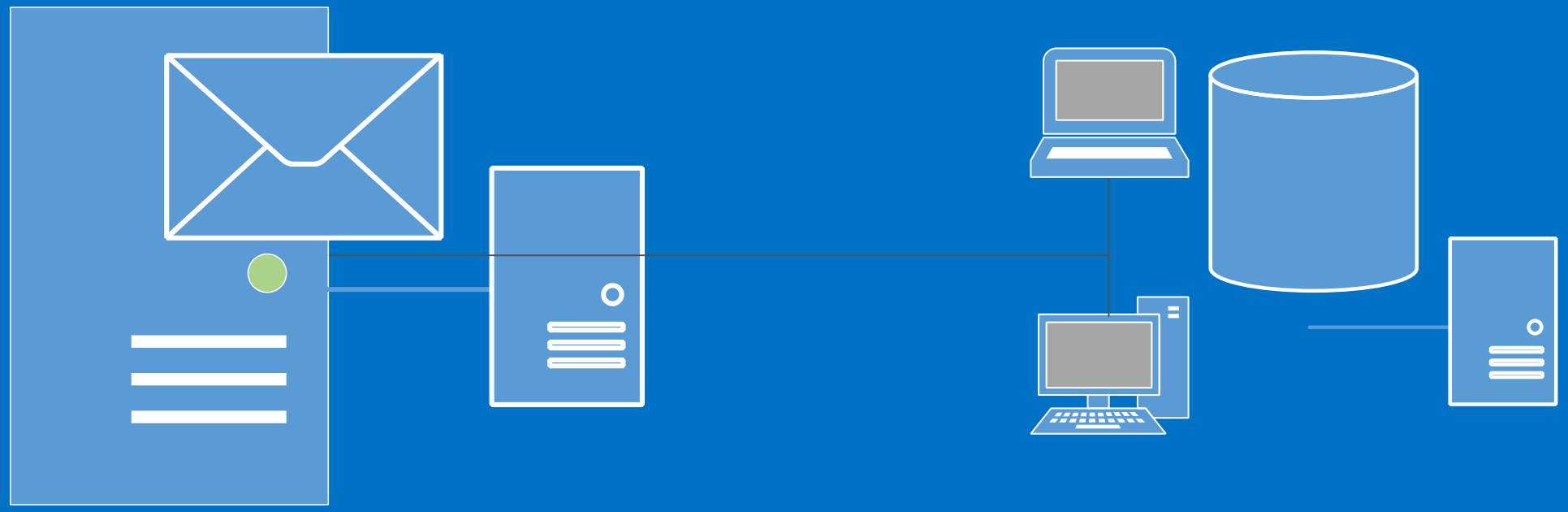
Objectives

Skills/Concepts	Objective Domain Description	Objective Domain Number
Installing Windows Server 2008 R2	Understand server installation options.	1.3
Introducing Server Roles	Identify application servers.	2.1
Comparing Physical Servers and Virtual Servers	Understand server virtualization.	2.5
Selecting Server Hardware	Identify major server hardware components	5.1
Identify Methods to Install Windows Servers	Understand updates.	6.3

Server

- A server is a computer that provides services, and a client is a computer that requests services.
- A network made up of servers and clients is known as a client/server network
- A server-based network is the best network for sharing resources and data, while providing centralized network security for those resources and data
- Networks using Windows Server are typically client/server networks



Server Roles

- Windows Servers use ‘roles’ to define what services the server provides
- A server can have multiple roles installed
- When you are determining hardware and software needs, look at the role the computer needs to fill and the load the computer will be placed under

File Services

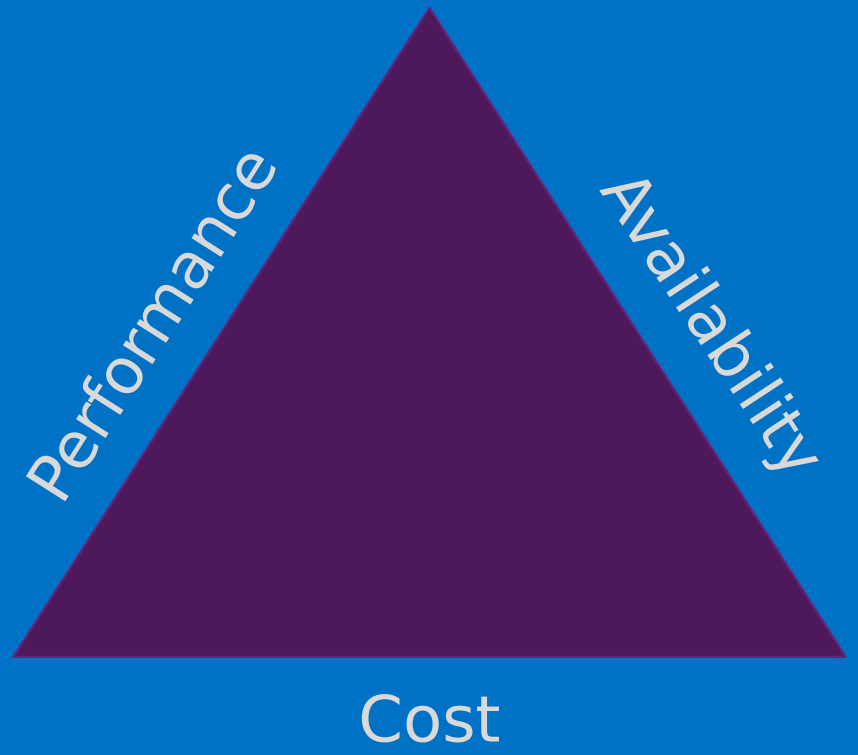
Web Services

Directory Services

Selecting Server Hardware

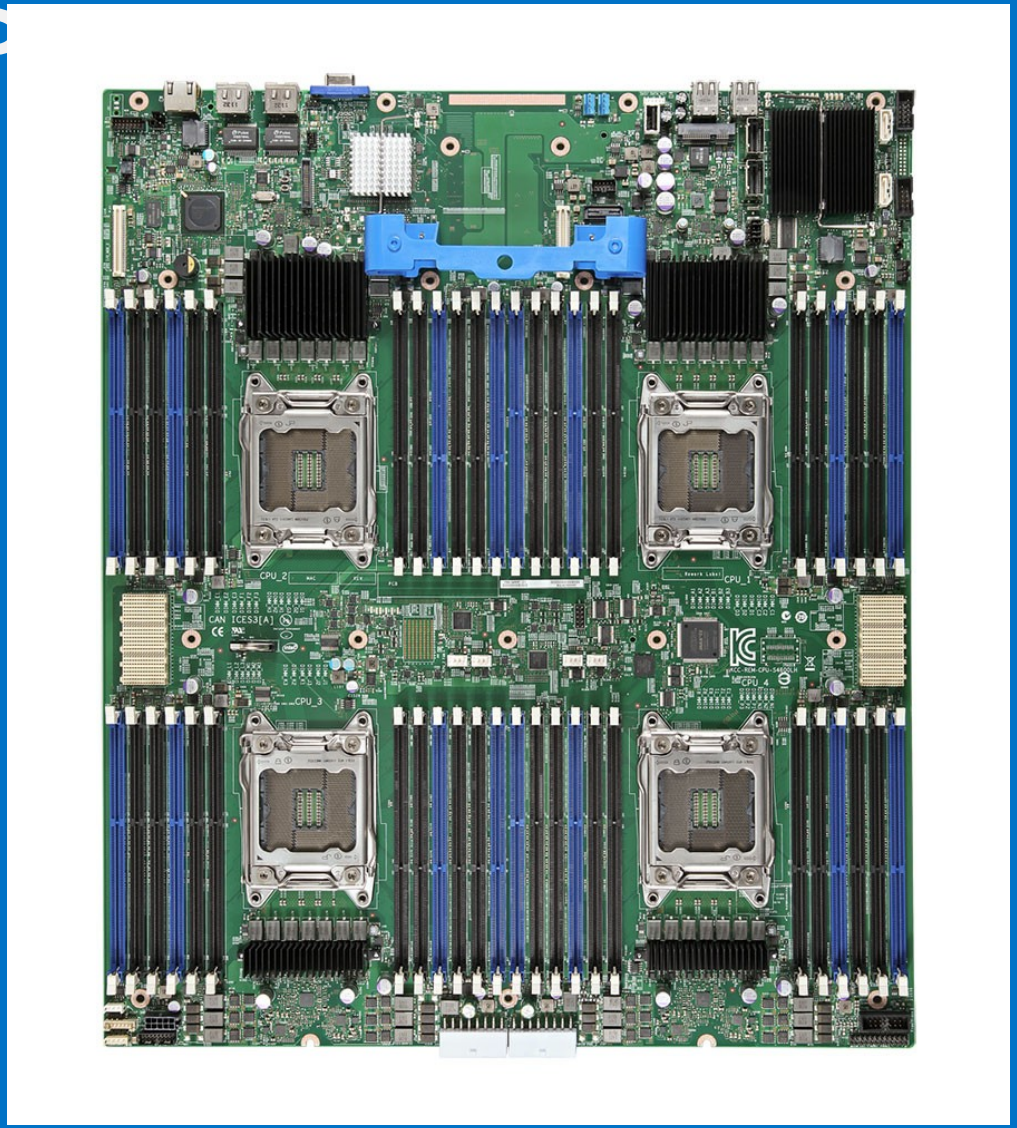
When choosing server hardware keep the following in mind:

1. Performance - Servers are intended to provide network services to many users
2. Availability - If the server fails or becomes unavailable, the issue will affect multiple people
3. Cost – How to balance available budget with the goals of performance and availability



Primary Subsystems

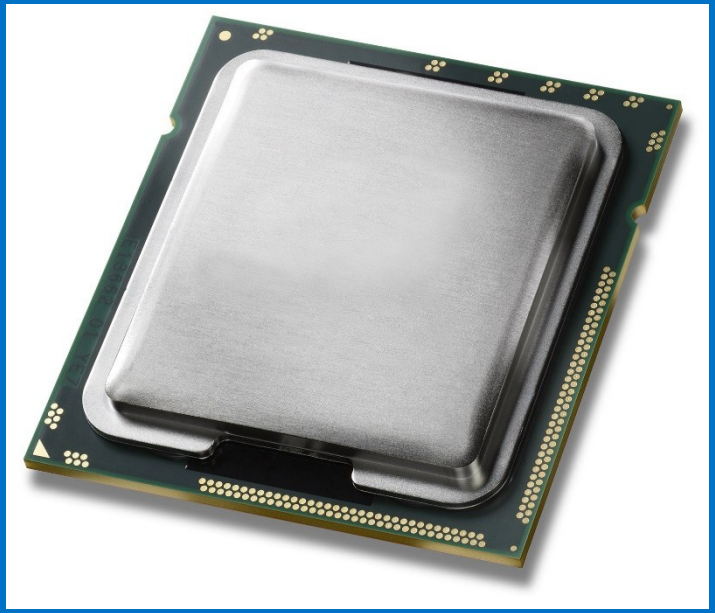
- Processor
- Memory
- Storage
- Network



* Failure in any of these subsystems can cause the entire system to fail
* They can also cause a bottleneck that can affect performance of the entire system

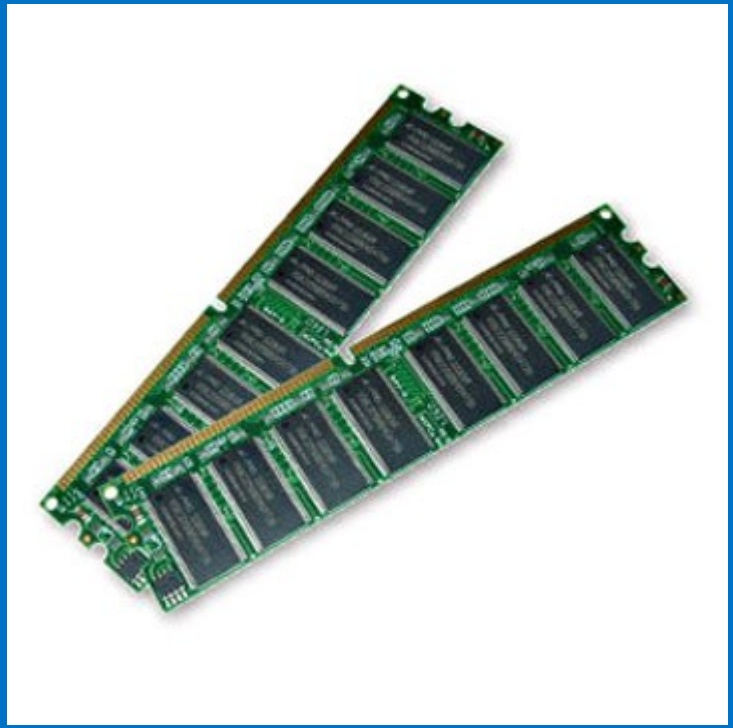
Processor

- Processors are typically 64-bit, which can process faster than 32-bit processors
  - 32-bit processor – 4 Gigabytes of RAM
  - 64-bit processor – 1 Terabyte of RAM
- A processor can only work on a single process / thread at a time
- Time slicing enables multiple threads and applications to be running at the same time
- A multicore processor enables multiple threads / application instructions to be worked on at the same time



Memory

- Random Access Memory (RAM) is the computer’s short-term or temporary memory
- It stores instructions and data that the processor accesses directly
- If you have more RAM, you can load more instructions and data from the disks
- Having sufficient RAM can be one of the main factors in your computer’s overall performance



Storage

- Traditionally, hard drives are half electronic/half mechanical devices that store magnetic fields on rotating platters
- Solid-state drives are electronic devices with no mechanical components
- Personal computers typically only have local storage consisting of internal hard drives
- Servers may also connect to external storage through a network-attached storage (NAS) or storage area network (SAN)

Network

- A network connection enables a device to communicate with servers or the clients
- Most devices include one or more network interface cards or NICs
- Speeds of today’s network cards are 100 Mbit/second, while a typical speed for servers is 1 Gbit/second or faster

Motherboard

- Motherboard is the main printed circuit board that brings these four subsystems together
- The processor plugs in or connects to the motherboard or system board enabling communication with the rest of the system
- The motherboard provides the electrical connections enabling components of the system to communicate

BIOS

- Basic Input/Output System (BIOS) are the instructions that control most of the computer’s input/output functions
- BIOS functions include communicating with disks, RAM, and the monitor kept in the System Read Only Memory (ROM) chips
- By having instructions (software) written on the BIOS, the system already knows how to communicate with some basic components such as a keyboard and how to read some basic disks such as IDE drives
- The BIOS also looks for additional ROM chips that may be on the motherboard or on expansion cards that you add to the system
- Flashing the BIOS is the process of updating your system ROM BIOS

Power Supply and Cases

- A case provides an enclosure that helps protect system components that are inside
- A case with the power supplies and additional fans are usually designed to provide a fair amount of airflow through the system to keep the system cool
- The power supply supplies electrical power to the mother board and components

Ports

- Ports are plug sockets that enable you to connect peripheral deices to your computer
- Devices can include a printer, keyboard, mouse, external drive or another computer
- Types of ports:
  - Ethernet
  - Parallel
  - PS/2
  - Serial
  - VGA
  - USB
  - SCSI
  - HDMI
  - Audio

Ports

Virtual Servers

- Virtual machines or virtual server technology enables multiple operating systems to run concurrently on a single machine
- Virtual servers allows for a separation of services so that changes on one virtual server do not affect the other virtual servers
- Virtualization offers a better way utilize hardware since most hardware is sitting idle most of the time

Locating the Server

- After you select and purchase the server and its components, you also need to determine where to physically locate the server
- The server room is the work area of the Information Technology (IT) department that contains servers and most of the communication devices including switches and routers
- The room should be secure, with only a handful of people allowed to have access to it

Software

- Software contains the instructions that the hardware follows, which make the computer do what it does.
- It provides us with an interface that we can use to configure and manage the computer
- Configuring a server:
  - Select, install and configure the operating system
  - Select, install and configure the services that the operating system provides
  - Install and configure additional software on the server

Windows Servers

- Windows NT (first released in 1993) is a family of operating systems produced by Microsoft
- Since then, Microsoft has built on the previous version and released:
  - Windows 2000 Server
  - Windows Server 2003
  - Windows Server 2003 R2
  - Windows Server 2008
  - Windows Server 2008 R2
  - Windows Server 2012
  - Windows Server 2012 R2

Windows Server 2008 R2

- Windows Server 2008 R2 editions
  - Windows Server 2008 R2 Foundation
  - Windows Server 2008 R2 Standard
  - Windows Server 2008 R2 Enterprise
  - Windows Server 2008 R2 Datacenter
  - Windows Web Server 2008 R2
  - Windows Server 2008 R2 for Itanium-Based Systems
- Windows Server 2008 R2 is only available in 64-bit version

Windows Server Roles

- A server provides services
- Windows Server 2008 R2 has organized the most common services into server roles
- A server role describes the function of the server
- Windows Server 2008 R2 server features are software programs that are not directly part of a role
- Server features augment the functionality of one or more roles to enhance the functionality of the server

Full Installation and Server Core

- Starting with Windows Server 2008, you can install Windows in one of two modes (both of which are provided on the installation DVD) :
  - Full Version
  - Server Core
- The full installation has a fully functional GUI interface and supports installing all available server roles and other Microsoft third-party software
- Server Core installation provides a minimal environment with no Windows Explorer shell that only supports certain server roles

Windows Server 2008 R2 System Requirements

Component	Requirement
Processor	Minimum: 1.4 GHz (x64 processor)
Memory	Minimum: 512 MB RAM
Disk Space Requirements	Minimum: 32 GB
Display	Super VGA (800 x 600) or higher resolution monitor
Other	DVD drive, keyboard and Microsoft mouse (or compatible pointing device), and Internet access

Clean Installation

- A clean installation installs the operating system to a new directory
- Select a clean installation in the following cases:
  - No operating system is installed on the computer
  - The installed operating system does not support the installation or upgrade
  - To configure a multi-boot configuration
  - A clean installation is preferred
- Performing a clean install of an operating system can be the preferred method because all files are installed again
- The disadvantage is that the system and all of its software needs to be reinstalled, patched, and configured and data copied over, something that may take hours or even days

Performing an Upgrade

- In some instances, you will want to take a current system and upgrade from an older version of Windows to Windows Server 2008 R2
- You cannot perform an in-place upgrade from 32-bit to 64-bit architecture since all editions of Windows Server 2008 R2 are 64-bit only
- You also cannot upgrade from one language to another
- Perform an upgrade when you want to keep the current configuration on the computer

Disk Cloning

- Disk cloning copies the contents of one computer hard disk to another disk or image file
- Disk cloning is a sector by sector copy of the contents of the hard disk
- Enables you to capture a customized Windows image that can be reused
- Windows Server 2008 R2 can be installed using disk cloning
- Disk cloning creates an exact copy of an operating system installation, which can be a problem for computers on a network

Sysprep

- If a Windows installation is cloned, each target computer using the same image will have the same parameters, including the same computer name and security identifier (SID)
- For these computers to operate properly without conflict on a network, these parameters have to be unique
- To overcome these conflicts, you run the system preparation tool (Sysprep)
- Benefits of Sysprep
  - Removes system-specific data from Windows
  - Configures Windows to boot to Audit mode
  - Configures Windows to boot to Windows Welcome
  - Resets Windows Product Activation

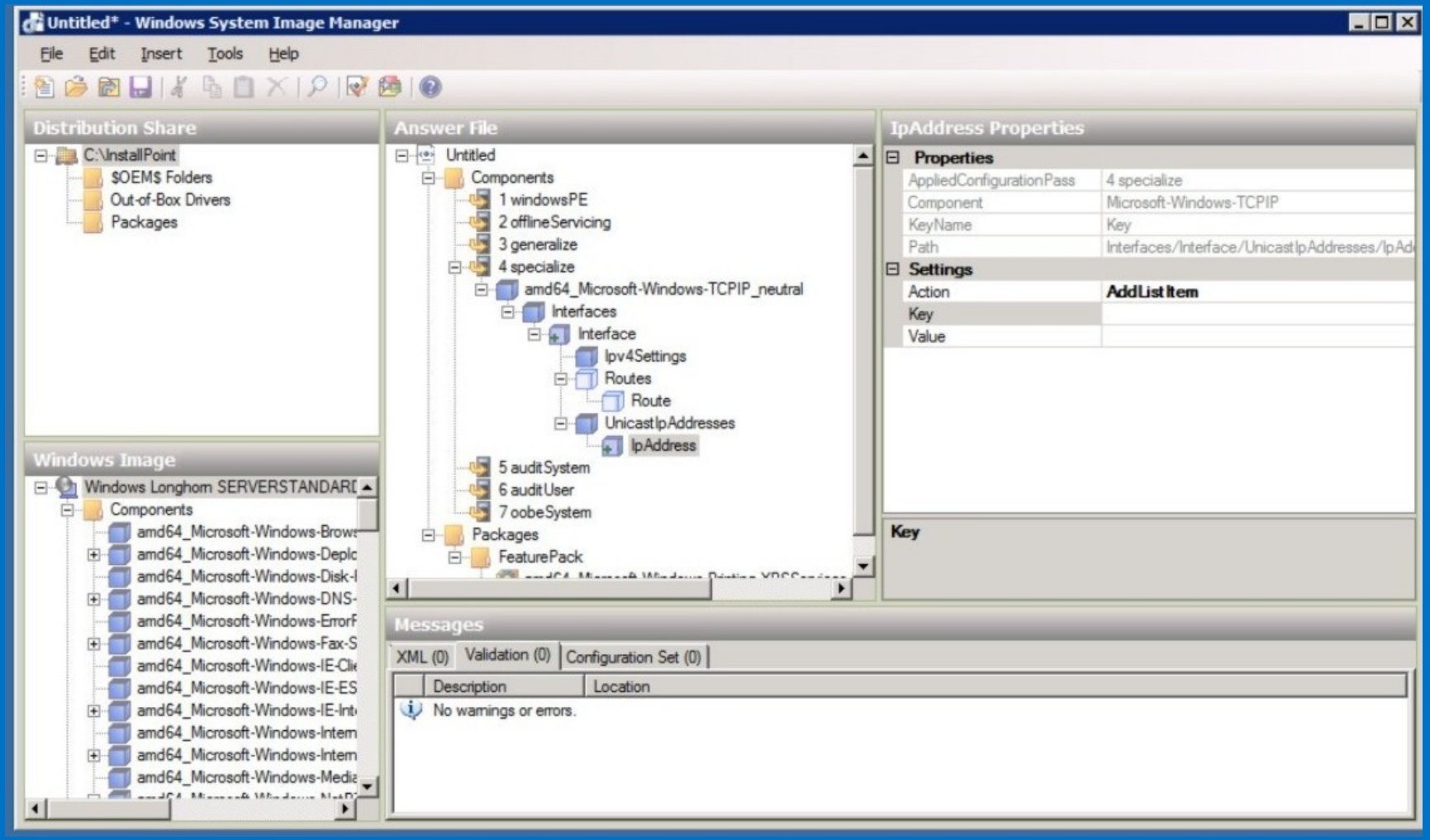
Unattended Installation

- An unattended installation enables you to automate the configuration and deployment of operating systems
- An answer file is used to perform an unattended installation of Windows
- An answer file is an XML file that stores the answers for a series of graphical user interface (GUI) dialog boxes
- You can use any text editor such as notepad to create and modify the answer file, Server Image Manager can also be used

```
[WinPE]
ConfigDisk=1
WindowsPartitionSize=61440

[InitialConfiguration]
Language=en-US
Locale=en-US
Country=US
Keyboard=00000409
AcceptEula=true
AcceptOEMEula=true
ServerName=HomeServer
PlainTextPassword=P@ssword
PasswordHint=Passing by
Settings=All
```

Server Image Manager



Windows Deployment Services

- Windows Deployment Services (WDS) is a technology from Microsoft for network-based installation of Windows operating
- Windows Deployment Services is the updated and redesigned version of Remote Installation Services (RIS)
- The deployment of Windows can be fully automated and customized through the use of unattended installation scripting files
- Benefits
  - Allows network-based installation of Windows operating systems
  - Deploys Windows images to computers without operating systems
  - Uses standard Windows Setup technologies including Windows PE, .wim files and image-based setup
  - Create images using a reference computer using the Image Capture Wizard

Windows Imaging Format (WIM) File

- Windows installation files can be distributed within a Windows Imaging Format (WIM) file
- WIM is the file-based imaging format that Windows Server uses for rapid installation on new computers
- WIM files store copies (known as images) of the operating systems

DEMO: WIM File

Windows Licensing

- A software license is purchased from a software company like Microsoft that gives you permission to use a specific software package
- Most licenses from corporations such as Microsoft work more like a lease rather than a purchase of the actual software
- Licenses are typically purchased for a specific number of users

Windows Activation

- Microsoft product activation, including Windows activation, is an anti-piracy technology designed to verify that software products are legitimately licensed
- Product activation is included in some technologies
- A product key is required to activate the product

Windows Updates

- Windows update helps keep your computer safer and your software current by fetching the latest security and feature updates from Microsoft
- After installing Windows, run Windows Update to install and apply fixes, patches, service packs, and device drivers
- Automatic updating can be enabled to download and install important updates as they become available

DEMO: Windows Update

Additional Resources & Next Steps

Instructor-Led Courses

- 40033A: Windows Operating System and Windows Server Fundamentals: Training 2-Pack for MTA Exams 98-349 and 98-365 (5 Days)
- 40349A: Windows Operating System Fundamentals: MTA Exam 98-349 (3 Days)
- 40032A: Networking and Security Fundamentals: Training 2-Pack for MTA Exams 98-366 and 98-367 (5 Days)
- 40366A: Networking Fundamentals: MTA Exam 98-366

Books

- Exam 98-365: MTA Windows Server Administration Fundamentals (Microsoft Official Academic Course)

Exams & Certifications

- Exam 98-365: Windows Server Administration Fundamentals

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